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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/668,952	09/22/2000	A. Ira Horden	042390.P3275	2770

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EXAMINER
DHARIA, RUPAL

ART UNIT	PAPER NUMBER
2181	

DATE MAILED: 04/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/668,952	Applicant(s) HORDEN ET AL.	
	Examiner Rupal D. Dharia	Art Unit 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-6* is/are allowed.

6)☒ Claim(s) *7-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 12-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Beard (5,627,412).

a. As per claim 12, Beard teaches a dynamically switchable power supply for an electronic system based upon fluctuating demand for operational power (Abstract). Beard teaches determining a frequency at which the CPU can operate based upon the an applications demand; determines a voltage potential level corresponding to the frequency; and provides the frequency and voltage potential levels to the CPU (Fig. 1; col. 3, line 25 through col. 4, line 23).

b. As per claim 13, Beard discloses the claimed invention as described above and furthermore, Beard teaches changing the frequency and voltage level in response to a change in the application mix (col. 4, lines 1-23).

c. As per claim 14, Beard discloses the claimed invention as described above and furthermore, Beard teaches adjusting the voltage potential level based upon the application mix executed by the processor (col. 4, lines 1-23).

d. As per claim 15, Beard discloses the claimed invention as described above and furthermore, Beard teaches determining an operational frequency based upon the application mix executed by the processor (col. 4, lines 1-23).

e. As per claim 16, Beard discloses the claimed invention as described above and furthermore, Beard teaches adjusting the operational frequency after adjusting the voltage potential level.

f. As per claim 17, Beard teaches a dynamically switchable power supply for an electronic system based upon fluctuating demand for operational power (Abstract). Beard teaches adjusting a voltage potential level based upon an application mix in the CPU (Fig. 1; col. 3, line 25 through col. 4, line 23).

g. As per claim 18, Beard discloses the claimed invention as described above and furthermore, Beard teaches determining an operational frequency based upon the application mix executed by the processor (col. 4, lines 1-23).

h. As per claim 19, Beard discloses the claimed invention as described above and furthermore, Beard teaches executing the application mix at peak performance (Abstract; col. 4, lines 15-23).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 7-11, 20-21, and 25-28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Beard (5,627,412).

i. As per claims 7, 20-21, 25-26, and 28, Beard teaches a dynamically switchable power supply for an electronic system based upon fluctuating demand for operational power (Abstract). Beard teaches providing at least two voltage potential levels (Fig. 1; col. 3, lines 8-24); and the CPU adjusts the voltage potential level depending upon the operational load of the CPU (col. 4, lines 1-23). However, Beard does not explicitly teach a static random access memory (SRAM) coupled to the processor. Official notice is taken in that both the concept and advantages of using a SRAM for storing instructions are well known and expected in the art of memories. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a SRAM in the system of Beard to provide a fast way to store data and retrieve the data as needed by the CPU.

j. As per claim 8, Beard discloses the claimed invention as described above and furthermore, Beard teaches providing an idle voltage potential level and a peak voltage level (col. 3, lines 8-24; col. 4, lines 1-23).

k. As per claims 9, 10, and 27, Beard discloses the claimed invention as described above. However, Beard does not explicitly teach a state machine for controlling the voltages. Official notice is taken in that both the concept and advantages of a state machine (controller) for controlling voltages are well known and expected in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a state machine for controlling voltages in the system of Beard to

perform the voltage control tasks outside the CPU to lessen the load of the CPU and save power required by the CPU for operation.

l. As per claim 11, Beard discloses the claimed invention as described above and furthermore, Beard teaches a clock signal generator to provide a clock signal of at least two frequencies (Fig. 1; col. 3, lines 45-62).

5. Claims 22-24 and 29-31, are rejected under 35 U.S.C. 103(a) as being unpatentable over Fairbanks et al. (5,153,535) in view of Applicant's Admitted Prior Art (AAPA).

6. Fairbanks discloses a power supply system for use with a computer. Fairbanks also teaches the power system has incorporated the ability to vary the supply voltage based upon the magnitude of the current supplied to the computer. Furthermore, Fairbanks teaches a variable frequency clock circuit, in which the frequency is changed based upon the voltage supplied. The computer system will operate at low voltage and low speeds to proved the performance needed and thus, reducing the power consumption (Abstract). However, Fairbanks does not teach a processor with a processor core and a pad ring. Applicant's admitted prior art (AAPA) teaches that it is known for a processor to have a processor core and a pad ring (Specification page 1, lines 23-26; specification page 2, 1-8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a processor with a processor core and a pad ring as described in AAPA, as it is well known for the processor to be supplied with a voltage from power supply and voltage regulator and also to provide voltages required by each of the processor core and the pad ring.

Allowable Subject Matter

7. Claims 1-6 are allowed.

Response to Arguments

8. Applicant's arguments filed 2/20/02 have been fully considered but they are not persuasive. As per applicant's arguments that the cited prior art of Beard (5,627,412) does not teach a frequency corresponding to a voltage, it is noted that Beard teaches "In a preferred embodiment an electronic system may dynamically switch operational voltages from a nominal 2.7 volts up to 3.3 volts or 5.0 volts when required. The electronic system ***correspondingly*** vary the operational frequency from 40 MHz to 60 MHz or 80 MHz on demand." (col. 2, lines 50-55). Furthermore, Beard teaches that power (P) is proportional to the square of the voltages (v) multiplied by the frequency (f), $P \propto v^2 f$, and with increased operational frequencies, it is desirable to ***correspondingly*** decrease the operational voltage (col. 1, lines 48-63). Therefore as applicant's claims are currently written the cited art reads on the limitations of the claims.

9. As per applicant's arguments that the cited art of Beard (5,627,412) does not teach varying the frequency and voltage levels based upon applications demands, it is noted that Beard teaches altering the clock speed and voltage levels based upon applications demands (col. 2, lines 15-37). Therefore as applicant's claims are currently written the cited art reads on the limitations of the claims.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rupal D. Dharia whose telephone number is (703) 305-4003. The examiner can normally be reached on M-F 7:00 AM- 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Wong can be reached on (703) 305-3477. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3600.

Rupal D. Dharia
Primary Examiner
Art Unit 2181

Rdd
April 2, 2002